

IN THE CLAIMS

Please amend the claims as follows:

1 1. (Original) A method of modifying frequency of electromagnetic radiation input into a
2
3 nonlinear medium comprising:

4
5 a) forming a moving grating in said nonlinear medium by introducing at opposite
6 ends of said nonlinear medium a first set of electromagnetic radiation having
7 varying frequencies;

8 b) inputting electromagnetic radiation into said nonlinear medium at a first
9 frequency; and

10 c) extracting electromagnetic radiation at a second frequency from said nonlinear
11 medium;

12 said moving grating in said nonlinear medium allowing for
13 electromagnetic radiation to be modified into said second frequency.

1 2. (Original) The method of claim 1, wherein said electromagnetic radiation is light.

1 3. (Currently Amended) The method of claim 1, wherein said varying frequencies are chosen
2 so that said first frequency coincides with a bandgap frequency region of the moving grating
3 in said nonlinear ~~material~~ medium.

1 4. (Currently Amended) The method of claim 1, wherein said input electromagnetic
2 radiation comprises an exponentially decaying spatial dependence into said nonlinear ~~region~~
3 medium.

1 5. (Original) The method of claim 1, wherein said input electromagnetic radiation is
2 reflected from the moving grating and propagates away at said second frequency.

1 6. (Original) The method as per claim 1, wherein said input electromagnetic radiation falls
2 within one of the bandgaps of the moving grating.

1 7. (Original) The method of claim 1, wherein said extracted electromagnetic radiation is
2 phase matched with said inputted electromagnetic radiation for electromagnetic radiation of
3 bandwidths below the bandgap size of said moving grating.

1 8. (Original) A method of converting frequency of electromagnetic radiation input into a
2 nonlinear medium comprising:

3 a. forming a moving grating in said nonlinear medium by introducing at opposite
4 ends of said nonlinear medium a first set of electromagnetic radiation having
5 varying frequencies;

6 b. inputting electromagnetic radiation into said nonlinear medium at a first
7 frequency; and

8 c. extracting electromagnetic radiation at a second frequency from said nonlinear
9 medium;

10 said moving grating in said nonlinear medium allowing for electromagnetic
11 radiation to be converted into said second frequency.

1 9. (Original) The method of claim 8, wherein said electromagnetic radiation is light.

1 10.(Currently Amended) The method of claim 8, wherein said varying frequencies are
2 chosen so that said first frequency coincides with a bandgap frequency region of the moving
3 grating in said nonlinear ~~material~~medium.

1 11. (Currently Amended) The method of claim 8, wherein said input electromagnetic
2 radiation comprises an exponentially decaying spatial dependence into said nonlinear ~~region~~
3 medium.

1 12. (Original) The method of claim 8, wherein said input electromagnetic radiation is
2 reflected from the moving grating and propagates away at said second frequency.

1 13. (Currently Amended) The method as per claim 4 8, wherein said input electromagnetic
2 radiation falls within one of the bandgaps of the moving grating.

1 14. (Currently Amended) The method of claim 4 8, wherein said extracted electromagnetic
2 radiation is phase matched with said inputted electromagnetic radiation for electromagnetic
3 radiation of bandwidths below the bandgap size of said moving grating.

1 15. (Currently Amended) A device for converting frequency of electromagnetic radiation
2 comprising a nonlinear medium that forms a moving grating in said nonlinear medium by
3 introducing at opposite ends of said nonlinear medium a first set of electromagnetic radiation
4 having varying frequencies, electromagnetic radiation is inputted into said nonlinear medium at a
5 first frequency and extracted at a second frequency from said nonlinear medium, said moving
6 grating in said nonlinear medium allowing for electromagnetic radiation to be converted into said
7 second frequency.

1 16. (Original) The device of claim 15, wherein said electromagnetic radiation is light.

1 17. (Currently Amended) The device of claim 15, wherein said varying frequencies are
2 chosen so that said first frequency coincides with a bandgap frequency region of the moving
3 grating in said nonlinear ~~material~~ medium.

1 18. (Currently Amended) The device of claim 15, wherein said input electromagnetic
2 radiation comprises an exponentially decaying spatial dependence into said nonlinear ~~region~~
3 medium.

1 19. (Original) The device of claim 15, wherein said input electromagnetic radiation is
2 reflected from the moving grating and propagates away at said second frequency.

1 20. (Original) The device of claim 15, wherein said input electromagnetic radiation falls
2 within one of the bandgaps of the moving grating.

1 21. (Original) The device of claim 15, wherein said extracted electromagnetic radiation is
2 phase matched with said inputted electromagnetic radiation for electromagnetic radiation of
3 bandwidths below the bandgap size of said moving grating.